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GEOGRAPHICAL RECORD.

AFRICA.

A RAILROAD TO KATANGA.—Mr. Robert Williams, Director of the Tanganyika Concessions, Limited, said recently in the *Matin de Bruxelles* (Oct. 29, 1906) that a railroad is building to establish quick connection between the mineral fields of Katanga and the Atlantic coast, a distance of 1,100 miles. Fifty miles of the line, starting from the Portuguese port of Lobito Bay, Angola, are already completed, and construction is in progress on the next section of 200 miles. When this work is completed, the road will have been led up through the mountains to the plateau, beyond which point scarcely any large engineering works will be necessary, as the line will run mainly along the water-parting between the Congo and the Zambezi systems, which is comparatively level and with no rivers of importance. The road, when completed, will give a route to Katanga 300 miles shorter than any other projected route from the coast.

Mr. Williams added that up to the present time about 100 sources of copper have been located in Katanga along a belt extending about 320 kilometers from northwest to southeast, almost to the frontier of Rhodesia. The amount of copper within 100 feet of the surface ready for exploitation is enormous. Tin, gold and coal have also been discovered. The resources in tin are very great, but the prospectors, as yet, have only found traces of gold. The coal discoveries are too recent to warrant any estimate of their value. The entire mining interests of the Tanganyika Concessions, Ltd., have been merged with those of a new and larger company, the Mining Union of Upper Katanga, which is also building the railroad between Lobito Bay and the Rhodesian frontier.

CAPTAIN LARRAS'S CARTOGRAPHIC WORK IN MOROCCO.—Captain Larras, a member of the French Military Mission in Morocco from 1899 to 1903, surveyed a large number of itineraries in the Makhzen regions (those subject to the full control of the Sultan), where he could travel safely. At times also he imperilled his life by extending his route surveys into the lawless areas. The routes he mapped extend for over 8,500 kilometers, of which about 2,000 are in northern and over 6,000 in southern Morocco. These itineraries make a perfect network of routes covering the triangle Tangier-Rabat-Fez, in the north, and the large quadrilateral formed by the Atlantic coast and the lines Rabat-Demnat-Tarudant-Agadir. The cartographer also paid much attention to the mapping of surface forms. The surveys cover 32 large sheets on a scale of 1:1,000,000, and three other sheets on a scale of 1:500,000. They are of a high order of excellence and are comprised in the region between 7° and 13° W. Long. from Paris, and 30° and 36° N. Lat. *La Géographie* (No. 6, 1906), in an article on Captain Larras's splendid contribution to the mapping of Morocco, expresses regret that, although the writer was permitted to see the sheets during the preparation of his paper and Mr. de Flotte-Roquevaire was also allowed to refer to this valuable material in preparing the second edition of his general map of Morocco on a scale of 1:1,000,000, the Service Géographique de l'Armée treats them as secret documents.

AMERICA.

ASSOCIATION OF AMERICAN GEOGRAPHERS.—This Association held its third annual meeting at the house of the American Geographical Society on Monday, Dec. 31, 1906, and Tuesday, Jan. 1, 1907. The programme, including about fifty papers and addresses, was so long that much compression was required to adapt it to the time limit. Five sessions were held, one on Monday evening. The evening session was given to recent exploration. Mrs. Leonidas Hubbard, Jr., gave an illustrated address on her recent pioneer survey of the Naskaupie and George Rivers, Labrador; Dr. F. A. Cook described his remarkable ascent of Mount McKinley, and showed slides of the journey clear to the top of the mountain; and Mr. Alfred H. Brooks spoke briefly of his meeting with Captain Amundsen at Nome. Among the other features of the programme were the following papers and addresses, many of which were illustrated. Those which were necessarily omitted or were read only by title are not given here:

Cyrus C. Adams. Some Phases of Future Geographical Work in America. President's address, (p. 1).

W. M. Davis. Memorial of Israel Cook Russell; Place of Coastal Plains in systematic Physiography; Geography as defined by Hettner; The Eastern Slope of Mexico.

William Churchill. Insularism and the Nesioté Type.

Charles C. Adams. The Evolution of the Isle Royale (Lake Superior) Biotic Environment.

G. E. Condra. The Opening of the Indian Territory.

Isaiah Bowman. The Deserts of Peru and Chile in South American History.

E. N. Transeau. The Need of Evaporation Data in Plant Geography.

William Libbey. Problems of the Panama Canal.

E. O. Hovey. The Isthmus of Tehuantepec.

Angelo Heilprin. Guiana and Venezuela as a Field for Geographical Exploration.

W J McGee. The Prospective Conquest of the Mississippi River; The American Deserts and their Reclamation.

Alfred H. Brooks. Railway Routes in Alaska.

H. L. Bridgman. The International Polar Congress at Brussels.

G. W. Littlehales. The Nature and Purpose of the Chart-Publications of the Navy Department, and their Geographical Extent.

E. Huntington. Influence of Changes of Climate upon History.

A. L. Rotch. The Circulation and Temperature of the Atmosphere at great heights above the tropical Atlantic.

R. DeC. Ward. The Meteorology of the North and South Polar Areas.

F. P. Gulliver. The Orientation of Maps.

A. P. Brigham. Geography for College Entrance.

Collier Cobb. Hatteras Island and its Shifting Sands.

D. W. Johnson. The Texture of Topography.

H. E. Merwin. Land Forms as Plant Controls.

A successful feature of the programme was the discussion of papers. In order to increase the interest and value of these discussions, the authors had been requested to supply brief abstracts of their topics, which were printed in the preliminary programme.

The meeting closed with a dinner at the Hotel Colonial on Tuesday evening. Professor Angelo Heilprin was elected President and Prof. A. P. Brigham was re-elected Secretary and Treasurer for the ensuing year. The other officers are: First Vice-President, Prof. Ralph S. Tarr; Second Vice-President, Mr. G. W. Littlehales; Councillors, Prof. W. M. Davis, Mr. Cyrus C. Adams and Prof. J. Paul Goode. The next winter meeting will be held at Chicago in connection with the meeting there of the American Association for the Advancement of Science.

The Association of American Geographers now numbers nearly 70 members throughout the country.

REPORT OF THE COAST AND GEODETIC SURVEY.—Superintendent Tittmann's *Report* for the year ending June 30, 1906, says that the most notable feature of the year's work was the determination of longitude in Alaska along the coast and in the interior by the telegraphic method. The completion of the military cable and telegraphic lines in certain localities made this possible. The determination at Eagle is important in connection with the marking of the international boundary. The new position of Valdez is three minutes of arc (or $1\frac{1}{2}$ miles) west of the position hitherto tentatively assumed. The work of tracing and marking the boundary line between Alaska and Canada and of re-marking the northwest boundary between the United States and Canada was continued. The magnetic declination, dip, and intensity were determined at 382 stations distributed over 43 States and Territories. A series of observations made on the *Bache* on her trip from Key West to Galveston and return supplied means to extend the iso-magnetic lines well into the Gulf, with almost as great accuracy as over the land. Numerous dangers to navigation were located.

GOVERNMENT MAP MAKING.—We are informed that the Departments of the Interior and of Agriculture are to co-operate in preparing traverse plan maps by the Geological Survey where they may be immediately needed in connection with the work of the Bureau of Soils. The survey of the soils of the country has made rapid progress in the Department of Agriculture for two years. The bases of these maps are topographic maps. For a large part of the country, more especially in the southern States, topographic maps are not yet available, as the greater part of the topographic mapping has been completed chiefly in the mountainous regions of the east and of the Far West, where mineral resources are the principal economic product. While the topographic surveys are now widely extended in the New England and middle Atlantic States, little progress has been made along the coastal plains from Maryland to Florida and Texas and through the Mississippi Valley and central and northern plains country. The co-operation between the two Departments will enable the Bureau of soils to push forward its surveys under more satisfactory conditions.

WORK OF THE HYDROGRAPHIC OFFICE.—The whole map issue of the Hydrographic Office at the present time comprises in round numbers 1,600 charts, of which 400 are lithographic and photo-lithographic productions and the remainder are engravings on copper and steel plates. As these charts are for the use of navigators the correct delineation of the coasts and the representation of the topographical and marine hydrographical features in the bordering regions are, of course, treated as of chief importance, while interior land features have been generally omitted. The Hydrographic Office is engaged systematically in the construction of general coast charts of the globe on a uniform scale of $4\frac{1}{2}$ inches to the degree of longitude on the Equator, of special coast charts on a scale of $\frac{1}{4}$ inch to the minute of middle latitude of each chart, and of local and harbour charts of foreign countries on large scales, varying according to the available data and the characteristics of the locality from 1 to 10 inches to the nautical mile.

MARYLAND GEOLOGICAL SURVEY.—This Survey has just published the third volume of a series of reports dealing with the systematic geology and palæontology of Maryland. The two preceding volumes dealt with the Eocene and Miocene deposits and the remains of animal and plant life which they contain. The present volume describes the two most recent divisions of geological time, the Pliocene and Pleistocene, which have exerted a potent influence upon the surface con-

figuration and soils of Maryland. The account of these deposits is from the pen of Dr. G. B. Shattuck, while Dr. William B. Clark, A. Hollick, and F. A. Lucas interpret the palæontological data.

Dr. Shattuck's monograph shows that the superficial deposits of Maryland are the last of a long series of unconsolidated beds, which began to be deposited in Lower Cretaceous and possibly Jurassic time, and have continued with interruptions down to the present. These deposits are composed of clay, peat, sand, greensand, marl, gravel, iron ores, and ice-borne boulders. The topography of the region shows that the surface of the Coastal Plain is made up of five distinct systems of terraces, the oldest lying at the top and the others lying successively beneath in the order of their age. The fifth terrace is now being built by the waves of the Atlantic Ocean, the Chesapeake Bay, and estuaries. Like all the Maryland reports the volume is handsomely produced.

LIMESTONE RESOURCES. IN OHIO.—The Geological Survey of Ohio has issued *Bulletins* 4 and 5, containing the results of an investigation of the limestone resources and industries of the State and of the manufacture of sand-lime brick. Comparatively little has been written about these industrial opportunities in Ohio, though the limestone quarries of the western half of the State have long afforded a field of great activity in the production of limestone and the manufacture of lime and its by-products. The limestones of the eastern part of Ohio have been neglected, the popular idea being that all were impure and dirty; but the growth of the Portland cement industry has brought about a more vigorous search to find these limestones in close proximity to fuel. This search has been productive, and in the southeastern part of the State limestones well adapted for the manufacture of Portland cement are found in close proximity to beds of coal and clay.

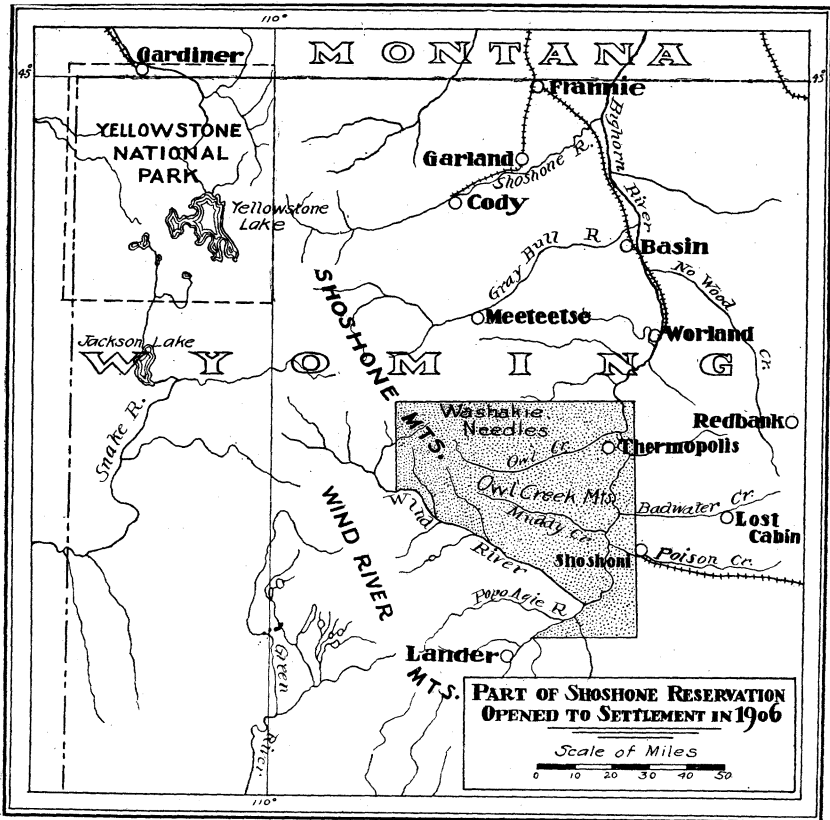
CLIMATE OF MICHIGAN.—The climate of Michigan is briefly discussed in a recent paper by Professor M. S. W. Jefferson, entitled *Material for Geography of Michigan* (Ypsilanti, Mich., 1906). The effect of the Great Lakes in mitigating the temperatures during a very hot spell, August 24, 1904, is shown diagrammatically, the cooling being noticed along the shores. The point is well made that Michigan is not, therefore, cooler in the mean than places east and west of it. A chart showing the distribution of minimum temperatures on the morning of January 24, 1904, clearly brings out the fact that the warming effect of the lake waters moderates the extremes of cold in the shore counties. A map of mean annual rainfall (1880-1904) shows some interesting patches of increased rainfall on every distinct elevation that stands to the southeast of one of the lakes.

R. DEC. W.

OPENING OF THE SHOSHONE INDIAN RESERVATION, WYOMING, TO SETTLEMENT.—About a year and a half ago, the Shoshone and Arapahoe tribes belonging to the Shoshone or Wind River Reservation in Wyoming ceded to the United States a portion of their reserve. The President of the United States on June 2 last made known by proclamation that all the unallotted lands in the ceded portion would be open to settlement on and after Aug. 15. As it was felt that many people throughout the country would be interested in the opening of these lands and desirous of knowing something about them, the Senate directed the Secretary of the Interior, last winter, to supply such information relating to the geology and natural resources of that region as might be in possession of the Geological Survey.

The results of the reconnaissance, made by N. H. Darton of the U. S. Geological Survey during the summer of 1905 have therefore been printed as Document No. 219 of the 59th Congress. The pamphlet is illustrated with maps and many photographs. Our map shows the entire area studied by the geologist and his assistants. The portion of the reservation that has been opened to settlement is that lying between the Wind River on the south, the Big Horn River on the east, Owl Creek on the north, and the eastern part of the Shoshone Mountains on the west.

The Wind and Big Horn rivers carry a large volume of water and flow in flat-bottomed valleys along which there is a moderate acreage of land that is



immediately valuable for agriculture. With a mean average rainfall of about 13 inches a year, the climate is too arid for the raising of crops without irrigation; but, by the construction of irrigation canals, wide areas of the basin lands may be brought under cultivation, especially if the flood waters of the mountain slopes are stored for use during the dry season. The greater part of the region is well adapted for grazing, and this, undoubtedly, will be its principal use. Fully two-thirds of the land is covered with a fair growth of nutritious grasses and water for stock is within reach, excepting in a few districts. Coal deposits in the centre of the area will afford a useful local supply.

BOGOSLOF ISLANDS.—President David Starr Jordan and Mr. Clark have an interesting, illustrated article on these islands in the December number of the *Popular Science Monthly*. Prior to 1796, there existed in the neighbourhood of Bogoslof Islands an isolated pillar of rock known as Ship or Sail Rock, which was mistaken for a ship under sail by Captain Cook in 1778. This rock was finally destroyed by the waves about 1888. In 1796 a volcano arose near this rock to which the name Bogoslof was given, this name being the Russian for Saint John, the Theologian.* The description of the formation of the birth and growth of this volcano has been handed down to us by Kotzebue from the story of a Russian trader.

In September, 1883, a new volcano appeared near this to which the name "New Bogoslof" has been given. Its birth was accompanied by the emission of great volumes of steam and showers of ashes. When visited in 1890 by Dr. Gilbert, there were two small islands a mile and a half apart, one of them steaming, the other, Old Bogoslof, already cooled off. On May 28th, 1906, when G. K. Gilbert again visited the region, he was astonished to find that the New Bogoslof, or Fire Island, was no longer smoking, but that a third very large island had arisen half way between the old and new islands.

This new volcano, which arose in April, 1906, has led Dr. Jordan to ask whether there might not be some possible connection between its formation and the San Francisco earthquake. But after consideration of the question he has dismissed it as improbable; and most geologists will agree in this conclusion.

R. S. T.

A LAND LAW FOR ALASKA INDIANS.—Dr. Sheldon Jackson recently called the attention of the Lake Mohonk conference (Proceedings, 1906) to the fact that Congress, last winter, passed a law giving the native population of Alaska an opportunity to secure title to land. He said that heretofore, wherever the white man desired a good plot of clear ground that an Alaskan native's ancestors had cleared and occupied, he simply took it, and the natives had no redress. Congress has now given an opportunity for them to secure a Government title to a tract of land that will fully protect their rights in it.

TREES ON RAILROAD LINES.—The Canadian Pacific Railway Co. has begun tree planting on quite an extensive scale along its Western lines. A contract has been let for a small acreage of breaking near Wolseley, on which it is the intention to experiment with tamarack for ties. A piece of ground is also to be planted at Medicine Hat with Jack pine and tamarack for the same purpose. Over 100 miles of trees are to be planted between Winnipeg and Calgary for snow breaks, and at several stations trees are to be planted around the station grounds, and prizes are to be offered the section foremen who make the best showing. The work, if carried on successfully, ought to encourage tree planting among the farmers of the West.—*Forestry Quarterly*, No. 4, 1906.

MAGNETIC SURVEY OF MEXICO.—A magnetic survey of Mexico is now in progress under the joint auspices of the Mexican Government and the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. The Mexican Government has two parties in the field under the direction of the Observatorio Astronómico Nacional Mexicano, Engineer Señor Abel Dias Covarrubias having charge of the eastern party and Señor Manuel Moreno y Anda being in charge of the western party, embracing the Pacific Coast from Manzanillo to

* In the Russian calendar the 8th of May is the day of Saint John Bogoslof.

Guaymas, inclusive of Lower California. The Carnegie Institution Observer, Mr. J. P. Ault, will confine his operations to the part of Mexico north of the 25th parallel, upon the completion of which he will then proceed to Campeche, Yucatan, and the Central American countries.

The early completion of the general magnetic survey of Mexico being thus assured, it will be possible within the next year to construct magnetic maps for the region between the parallels of latitude 20° and 49° and meridians of longitude 65° and 125° West of Greenwich.

CLIMATOLOGY OF COLOMBIA.—As evidence of the increasing attention which the South American republics are now attracting, we have more and more numerous publications, both in the form of books and of articles, on these countries. A recent book on Colombia (*The Republic of Colombia*, by F. Loraine Petre, London, Stanford, 1906), commenting on the three mountain ranges of the country, calls attention to the fact that on the central range the snow-line is at 15,000; the limit of forest growth at 10,000 ft., "and between these limits exists the *Páramo*, or cold desert, a region beyond description, almost without vegetation, always covered by a cold, dense fog, and in many places swampy." These *páramos* occupy the summits of the western range of mountains, and also all the passes of the central range, and constitute an important hindrance to travel. The "perpetual spring" climate of Bogotá is, as usual, accorded high praise, although the monotony of such uniform conditions is surely not ideal for one used to the variety of meteorological phenomena and changes of the north temperate zone. Tropical diseases, like yellow fever and malaria, are unknown at Bogotá, and "tuberculosis has no abiding habitation among the natives." Advanced cases of tuberculosis are reported as being cured in a remarkable way.

R. DEC. W.

THE CLIMATE IN THE AMAZON BASIN.—A study of the climate of the Amazon basin region, and especially of the lower Amazon, by Paul LeCointe (*Ann. de Geogr.*, XV, Nov. 15, 1906), brings out many interesting facts concerning the meteorological conditions of a district of which comparatively little is known as yet. The writer, who has lived in the country continuously for fourteen years, has endeavoured to give an impartial opinion concerning the climate, especially in relation to European settlement, pointing out that the most exaggerated statements have found their way into print as to the favourable and also as to the injurious effects of the climate upon the white race. The temperatures are characteristically high and very uniform, the maxima occurring in the lower Amazon basin, but nowhere exceeding a mean annual of 81.5° . The well-known fact that high maxima are recorded in the arid regions of the tropics, at greater distances from the equator, is noted. The natural division of the year is not according to temperature, because the variations are small, but according to rainfall. Rainfall is heavy over the whole area, *i. e.*, the number of rainy days is large, but downpours of the Bengal type, or such as occur on the west coast of Africa, are stated to be unknown. There are no severe droughts, such as those occasionally noted in other adjacent parts of northern Brazil. The northeast trades, coming over a large extent of warm ocean water, carry an enormous quantity of water vapour across the whole South American continent up to the western Cordilleran barrier. The rainfall régime, as has long been known, is not as simple as is found, for example, in parts of equatorial Africa. On the north bank of the Amazon estuary, at Macapa, the rainy season is sharply

separated from the dry season, the former lasting eight months and the latter four months. This same régime is found at many other places. On ascending the Amazon, especially on the left bank, the two seasons are very distinct as far as the Rio Purús, but the duration of the rains decreases, and occasional heavy downpours interrupt the dry season. At Pebas the rains last almost all through the year. On the eastern base of the Cordillera the moisture brought by the trades is condensed into almost incessant rains or snows, while across the mountains, on the west coast, there is extreme aridity. Dew forms in such large amounts in the interior that it actually falls as rain from the tree tops—a curious phenomenon, first reported for this region, we believe, by Humboldt. Cyclones are unknown, and the reported occurrence of “tornado” we should question. It was probably a straight-line gale. Floods covering an immense extent of country, and forcing men and domestic animals to seek the upper parts of dwellings or to live for a time in boats, occur with regularity. An interesting compensation of rainy seasons along the tributaries on the two sides of the Amazon keeps up high water in the main river. When the water supply from the tributaries on the right bank decreases, the tributaries on the left bank bring in their high water supply, the difference in season depending on the migration of the doldrum belts of equatorial rains. A hot summer in the Cordilleras means rapid melting of the snows there, and high water in the streams supplied from that district. The general summary of the climate is as follows: Frequent and abundant rains, but not downpours; high humidity nearly reaching saturation over most of that part of the basin which is covered with forests; periodic inundation of the lowlands; the heat not excessive, but constant, in part compensated by good ventilation. The periodic overflows make it impossible to use for agriculture much of the low-lying alluvial land.

Malaria is the principal barrier in the way of exploration and settlement by white men in the interior, and occurs in places with apparent disregard of the presence or absence of the *anopheles* mosquito. Yellow fever, beri-beri and leprosy are also common. At Belén yellow fever is a real danger to the new arrival, but hardly ever attacks the native or an acclimated individual. Beri-beri is found in the upper part of the valley, above Manaos. As elsewhere in the tropics, all the endemic diseases are due more to the neglect of proper sanitary precautions than to the climate. The writer believes that for the European colonist who chooses a suitable dwelling-place, and who lives temperately, the climate of the lower Amazon is perfectly bearable. Great care of the health must, however, be taken at all times, especially during any journey into the interior; during the beginning of the rainy season, and during the fall of the flood waters. The best places for settlement are the higher portions of the basin.

R. DEC. W

THE GUAYAQUIL AND QUITO RAILWAY.—This is the railway which ascends from the sea at Guayaquil the western slopes of the Ecuadorian Andes, and is now being extended along the high plateau to Quito, the capital. Mr. Archer Harman, President of the railway, in an official statement issued Oct. 25, 1906, says that of the entire length of the railway from Guayaquil to Quito—namely, 286 miles—the line has been completed for 190 miles, including the whole of the mountain division which crosses the lower east slope of Chimborazo at a height of 11,800 feet, and is in operation as far as Mocha in the Ambato valley. Of the remaining 96 miles (the plateau division), the grading and masonry are completed to Quito, and rails are being laid at the rate of 4,000 to 5,000 feet per day.

Rails, ties, bridges, and all the material necessary to complete the line to Quito are on hand and the physical condition of the line and equipment are excellent.

SEISMOLOGICAL RESEARCH IN AMERICA.—Recently, in a brief note in the *Popular Science Monthly* (Sept., 1906), Professor W. H. Hobbs calls attention to the fact that America is distinctly behind Europe and Japan in provision for the study of earthquake phenomena. This fact was plainly brought out by the meagre accounts of the California earthquake from stations in the United States. That such a study is of high importance is generally admitted. Dr. Hobbs makes appeal for provision in the territory of the United States, including the outlying colonies and protectorates, for careful comparative study of future earthquake shocks. He wisely suggests that a central station should first be established in which the experiences of European observers should be made use of; and he further suggests that this first station should, for a time at least, be under the superintendence of some one of the thoroughly trained men available in Europe. It is his idea that this central station should be of the same grade as the Imperial German Chief Station for Earthquake Investigation at Strassburg.

In direct association with this main station he advocates that secondary stations should be established throughout the territory over which the United States have direct or indirect control. Owing to the wide extent of such territory, a system of stations such as he proposes could not help being of the highest importance.

Dr. Hobbs urges that the American Association for the Advancement of Science follow the example of the British Association in the appointment of "a committee to watch over the interests of seismological research in America and to direct the course of legislation in accordance with its teachings." R. S. T.

ASIA.

DR. STEIN'S RETURN FROM CHINESE TURKESTAN.—Dr. Stein reports in a letter to the London *Times* his return from his second series of explorations in Chinese Turkestan. On this journey, as earlier, he combined careful surveys of the Chinese-Indian frontier with archaeological work. His former surveys of the farther side of the Kuen-lun have been largely supplemented and he has explored more ancient sites, revisiting also the Rawak Stupa, from which, on his first visit, he obtained such important archaeological material. He had secured more ancient documents and his whole work will be very valuable as a sequel to his first investigation.

ECONOMIC GEOGRAPHY OF UPPER BURMA AND THE NORTHERN SHAN STATES.—A study on this topic fills about 100 pages of the *Jahresbericht* of the Zürich Geographical-Ethnographical Society. The monograph is by Dr. Hans J. Wehrli, who prefaces his economic description with a thorough geographical account of the region. A bibliography concludes the paper. The contents are largely derived from Dr. Wehrli's own studies in Burma.

EXPLORATIONS IN THE INTERIOR OF THE MALAY PENINSULA.—Messrs. Nelson Annandale and Herbert C. Robinson made an expedition in 1901-1902 to Perak and the Siamese Malay States, under the auspices of the Universities of Edinburgh and Liverpool, with anthropological and zoological studies as their chief object. The Society has received the results of their work in a number of reports printed under the title of "*Fasciculi Malayenses*" (published for the University Press of Liverpool). Their travels were in the almost unknown interior from

Selangor to beyond the frontier of Siam and their anthropological studies related chiefly to the Sakais and the Semangs, the latter and more northern people having had no intercourse with the white race and mixing very little with other tribes. They are negritoid and of fairly pure stock, most of them inhabiting the plains, while the more southerly Sakais are hill men. The studies of these explorers and the later work of Mr. A. Grubauer among the Semangs (*Pet. Mitt.*, 1905, Nos. 11 and 12) throw clear light upon a distinct type of the jungle folk of the Malay Peninsula.

The geographical part of the work is contained in a supplement in which the explorers describe the places they visited, with a number of good photographs and an excellent map by Bartholomew. They note one fact of great geographical interest:

We were able, however, to verify one important geographical fact bearing on the question of the high level fauna of the peninsula, which differs so completely, at any rate as far as the birds are concerned, from the fauna of the plains. There is a very distinct break in the main range in central Kedah, for in crossing from Senggora we neither ascended higher than a few hundred feet above sea-level, nor did we see a single high mountain in the vicinity of the track. This fact is interesting, because it has frequently been taken for granted that the mountain fauna of Perak, which is not found much below 3,000 feet, has a continuous distribution with that of the mountains of northern India, to which it is so nearly related; whereas it is evident, in the light of this observation, that no such exact relationship can exist at the present day . . . the Malay Peninsula, as our whole collection has served to confirm, is connected with India, as regards zoo-geography, in a degree not much more intimate than that which links it to Borneo, though many mainland forms peculiar to the plains have made their way south across the isthmus of Kra.

EUROPE.

THE GERMAN AND AUSTRIAN ALPINE UNION.—The *Zeitschrift des Deutschen und Österreichischen Alpenvereins* for 1906 appears in its usual sumptuous form with a large variety of mountaineering papers, illustrated with maps and very beautiful photographs. The volume contains nearly 400 pages, and over 100 illustrations, including a remarkable panorama by Dr. G. Merzbacher of the central portion of the Tian Shan. Among the topics, Dr. Merzbacher treats of the Tian Shan ranges; Dr. Bertram of high climbing in the Central Pyrenees; Mr. Hans Pfann of two journeys without guides in the group of Mont Blanc; Prof. G. Steinmann of geological problems in the Alps; Mr. Henry Hoek of mountain climbing in Bolivia, and Mr. E. W. Bredt of the development of Alpine art. Tourists in most parts of the Alps are now constantly reminded by comfortable shelter houses, well-built paths, and guide-posts everywhere, of the debt that Alpine travellers owe to this Union, whose energy has supplied so many conveniences.

MARINE FISHERIES OF NORTHERN EUROPE.—The Permanent International Council for the Exploration of the Sea has just issued in Copenhagen the first volume of the "Bulletin Statistique des Pêches Maritimes des Pays du Nord de l'Europe," covering the years 1903 and 1904. As full an account of the sea fisheries in the countries of north Europe is given as the available information permits. Both the English and German common names of species of fish are given. The quantities of the various species are expressed in terms of weight, the kilogram being taken as a unit. Statistics for over 30 species of fish and for each country are tabulated and a series of charts shows the herring fisheries for every month, conventional signs making it possible to calculate the total quantities of herring taken at or near the position marked, to within about 125,000 pounds of the actual quantities.

VESUVIUS DURING THE EARLY MIDDLE AGES.*—Under this title Dr. Chas. R. Eastman discusses the question of the probable early condition of Vesuvius, basing his discussion upon the descriptions which have been handed down to us, and accompanying his paper by a reproduction of some of the earlier views. It has been customary to consider the form of Vesuvius before the eruption of 79 A. D. to have been that of a fairly regular cone, capped by a large crater or caldera. Eastman challenges this interpretation, and in support of his position shows that illustrations of the Volcano during the Middle Ages clearly prove the presence of the older crater or Somma rim somewhat like that of the present. He also reproduces a Pompeian fresco in which the ancient Somma rim is represented, indicating quite clearly that the old crater rim was present even before the destruction of Pompeii, and that its origin antedated the great historic outbreak of 79.

R. S. T.

THE ERUPTION OF VESUVIUS IN 1906.—During the recent (April, 1906) eruption of Vesuvius an American geologist, Prof. W. H. Hobbs, who was then in Italy, found opportunity to examine some of the phenomena associated with it. His observations have recently been published,† with a number of illustrations. This eruption, the greatest since 1631, has been so fully described in numerous papers that no attempt will be made to repeat these descriptions. Two points in Dr. Hobbs' paper, however, stand out prominently. One is the fact that the windows in houses were in some cases broken on the side away from the volcano. Hobbs interprets this as the result of in-moving air currents toward the ascending column of steam rising from the volcano. This in-drift, he infers, so deflected the path of projectiles that they moved not only downward but inward, toward the cone.

A second point relates to a possible association of volcanoes with earthquakes. Milne has shown that the West Indian earthquakes have been related, in a broad way, to the greater eruptions of the volcanoes there; and Suess has shown that the greatest of the Calabrian earthquakes, that of 1783, followed upon grand eruptions of both Vulcano and Etna. Hobbs points out that the newest eruption of Vesuvius, the greatest since 1631, followed close upon the greatest near-by earthquake that has occurred in more than a century, and that the great earthquake of about a century ago occurred not long after the important Vesuvius eruption of 1794.

Thus Hobbs concludes that "while there is apparent lack of quick sympathetic response of one phenomenon to the other, evidence is not wanting that the influence of the one *slowly* makes itself felt upon the other."

R. S. T.

VARIOUS.

THE FRANCO-AMERICAN EXPEDITION TO EXPLORE THE ATMOSPHERE IN THE TROPICS.—Dr. A. Lawrence Rotch has published a paper on the results of this expedition in the *Proceedings of the American Academy of Arts and Sciences* (Dec., 1906). Mr. Teisserenc de Bort, the well-known French meteorologist, participated in the enterprise by placing the steam yacht *Otaria* at the service of Mr. Rotch. Messrs. Maurice and Clayton, the scientific staff, sailed during the months of July and August, 1905, from the Mediterranean, *via* Madeira, the Canary and Cape Verde Islands, to latitude 10° N. long. 30° W., returning

* Popular Science Monthly, Vol. LXIX, Dec., 1906, pp. 558-566.

† Journal of Geology, Vol. 14, 1906, pp. 636-655.

via the Azores to Havre. Seventeen kite flights were made over the ocean, and continuous records of barometric pressure, air temperature, relative humidity, and wind velocity were obtained from sea-level up to the extreme height of 2,200 meters, although wind velocity was recorded to an altitude of 3,100 meters. The direction of the wind was obtained by measuring the azimuth of the kites.

To attain a greater height in the free air than was possible with kites the *Otaria* was provided with large paper balloons, 11 of which, filled with hydrogen gas, were liberated from the Azores, Madeira, Canary and Cape Verde islands, and it was found possible to follow some of the balloons with a telescope till they reached a height of 11,000 or 12,000 meters.

A series of tables gives the results of these meteorological investigations, in respect of temperature, relative humidity, wind direction, and velocity, for various altitudes. The conditions at heights above the surface trade-winds were deduced by Mr. Clayton as follows:

Above the surface trade is a current, some 2,000 meters in depth, varying in direction between northeast and northwest. . . . This current is extremely dry and potentially warm, and its velocity usually much exceeds that of the lower wind. The third stratum, which begins at a height of about 3,000 meters, moves from east, south, or southwest, being generally from the east in equatorial regions and from the south between latitudes 15° and 30° N. . . . As observed on the Peak of Teneriffe this stratum was dry in its lower portions, but with a larger vapor content than the air immediately below. Alto-cumulus and alto-stratus clouds were seen floating in it at a height of perhaps 4,000 or 5,000 meters, and from them light sprinkles of rain fell occasionally. . . . It is seen that the upper anti-trade is shown both by the balloons and by the drift of the clouds, the stratified conditions giving place to the southerly wind between 3,000 and 4,000 meters. Therefore the classic observations of the return-trade which were long ago made on the Peak of Teneriffe indicate a general phenomenon, and agree with those obtained over the open ocean by the present expedition.

THE FIFTEENTH BIBLIOGRAPHY OF THE ANNALES DE GÉOGRAPHIE.—The *Bibliographie Géographique Annuelle* for 1905 contains 1066 titles, including the best and most authoritative contributions to geography during the year under review. This annual volume is of special value to every geographical worker, because, although it by no means covers the entire range of geographical literature, the titles are selected with special view to their authoritative nature and helpfulness. It brings the literature down to recent date, and very many of the titles are accompanied with informing notes showing the nature of their contents and their distinctive value. Fifteen pages are given to the United States, and the publications of the Government Departments are fully represented. The regional distribution of the contents, together with the index of authors, facilitates reference to every title.

THE GOLD MEDAL offered by the National Geographic Society, Washington, for extraordinary achievements, was presented to Commander Peary by the President of the United States at a banquet on Dec. 15.

THE GEOGRAPHICAL SOCIETY OF VIENNA celebrated the fiftieth Anniversary of its foundation at a meeting held on Dec. 15 under the presidency of the Archduke Rainer, Patron of the Society.

RECENT ADVANCES IN WIRELESS TELEGRAPHY.—In a recent address before the Royal Institution of Great Britain (*Proceedings*, Vol. XVIII, Part 1), Dr. Marconi said that over 80 British and 30 Italian warships are now equipped with his apparatus. Those which are fitted with long-distance apparatus are able to keep in touch with England when far out in the Atlantic, at Gibraltar and in the Mediterranean. Admiral Lord Charles Beresford authorized the speaker

to say that during the last cruise of the Channel Fleet from Gibraltar to England they had no difficulty whatever in receiving messages from Cornwall during the entire voyage. Seventy liners belonging to England, Italy, France, Germany, Holland, Belgium and the United States are fitted with the apparatus. On a recent occasion at Glasgow University Lord Kelvin said that he not merely believed that messages could be transmitted across the Atlantic, but that some day it would be possible to send messages to the other side of the globe.

The Annual Meeting of the American Geographical Society was held at Mendelssohn Hall, No. 119 West Fortieth Street, on Tuesday, January 22, 1907, at 8.30 o'clock, P. M.

Mr. John Greenough in the chair.

The following persons, recommended by the Council, were elected Fellows:

Max Fleischman.	Anthony Fiala.
Charles A. Peabody.	Henry W. Carey.
Frederick W. Wunderlich.	Robert B. Van Cortlandt.

The Annual Report of the Council was presented and read:

January 17, 1907.

To the American Geographical Society:—

The Council respectfully submit the following report for the year 1906:

The number of Fellows on the 1st of January was 1,355. The additions during the year were 161. The losses by death, resignation, etc., were 113 and the total Fellowship on the 31st of December was 1,403, of which number 374 were Life Fellows.

The additions to the Library number 5,098: Periodicals and Pamphlets, 3,515; Books, 633; Maps and Charts, 925; Atlases, 25.

Seven Regular Meetings of the Society were held:

On the 5th of January Dr. Otto Nordenskjöld of the Swedish Antarctic Expedition described the experiences of Two Years in the Ice of the South Pole;

On the 30th of January Mr. Poultney Bigelow addressed the Society on An American Panama—Some personal Notes on Tropical Colonisation as affected by Geographical and Political Conditions;

On the 20th of February Mr. William M. Davis addressed the Society on Experiences with the British Association in South Africa;

On the 20th of March Mr. Albert Perry Brigham read a paper on the Fiords of Norway.

On the 17th of April Mr. Howard W. Du Bois addressed the Society on a Mining Engineer's Reconnaissance in the Canadian Rocky Mountains;

On the 20th of November Mr. Richard Arthur described a Yacht Voyage of 10,000 Miles: Round the West Indies and up the Amazon;

On the 18th of December President Peary addressed the Society on the Field Work of the Peary Arctic Club, 1905 to 1906.

On the 15th of November the following awards were made:

To Dr. Robert Bell the Cullum Geographical Medal, for Fifty Years' Exploration in the Dominion of Canada; and to Dr. Thorvald Thoroddsen the

Charles P. Daly Medal, for Geographical and Geological Work in Iceland and his History of Icelandic Geography.

There have been published in the Bulletin, besides the Record, the Scientific Notes and the Book Reviews, twenty-five original papers, and the Bulletin for February was principally devoted to the transactions of the Association of American Geographers at their second annual meeting held in the Society's house on the 26th and 27th of December, 1905.

The Association of American Geographers was offered and accepted the use of the Society's rooms for the Association's third annual meeting on the 31st of December and the following day.

For the condition of the finances reference is respectfully made to the report of the Treasurer, herewith presented.

All of which is respectfully submitted.

JOHN GREENOUGH, *Chairman*.

LEVI HOLBROOK, *Secretary*.

The Report of the Treasurer was then read:

Report of the Treasurer to the American Geographical Society for the year 1906:

GENERAL ACCOUNT.

The Treasurer respectfully reports:

On January 1, 1906, there was on hand a cash balance of		\$3,492.62
During the year there have been received for Fellowship Dues, Sales of Publications, Interest on Investments, etc.		\$20,996.20
		\$24,488.82
There have been expended for Salaries, Meetings, Library, Publications, House Expenses, Insurance, Postage, etc.	\$21,076.31	
Exploration Fund	1,090.81	\$22,167.12
Balance on hand Dec. 31.		\$2,321.70
Mortgages purchased		\$4,650.00

Respectfully submitted,

HENRY PARISH, JR., *Treasurer*.

The Chairman announced that President Peary had found it necessary to resign the office of President, and the Council considered it most fortunate that Mr. Archer M. Huntington had consented to be nominated for that office. Mr. Peary takes with him in retiring the high regard of the Society and the warmest wishes of his associates in the Council for his success in all his enterprises.

The report of the Committee charged with the duty of selecting candidates for the offices to be filled was then read:

NEW YORK, January 17, 1907.

To the Council of the American Geographical Society:

The Committee appointed to recommend to the Society suitable persons to be elected in January, 1907, to fill vacancies then existing in its offices, respectfully

report that they recommend the election of the following-named persons to the offices designated:

	TERM TO EXPIRE IN
President	ARCHER M. HUNTINGTON..... 1908
Vice-Presidents.....	{ D. O. MILLS 1910 GEORGE S. BOWDOIN 1909
Treasurer.....	HENRY PARISH, JR..... 1908
Domestic Correspond- ing Secretary.....	JOHN GREENOUGH..... 1908
Recording Secretary..	ANTON A. RAVEN..... 1910
Councillors.....	{ JAMES D. HAGUE LEVI HOLBROOK MORRIS K. JESUP GUSTAV E. KISSEL } 1910
	{ JOHN GREENOUGH A. A. RAVEN A. D. RUSSELL } <i>Committee.</i>

The above recommendations have been approved by the Council.

The Chairman asked the pleasure of the Society with regard to the Report. It was moved and seconded that Mr. Cyrus C. Adams be authorized to cast the vote of the Society for the persons named; it was so done, and they were declared duly elected.

The Chairman then left the platform and returned with Mr. Huntington, who was heartily received by the Society. The President expressed his deep sense of the honour conferred upon him by his election, and took his place as presiding officer. He then introduced the speaker of the evening, Mr. Howard W. Du Bois, who addressed the Society on the Grand Cañon of the Colorado. Stereopticon views were shown.

On motion, the Society adjourned.

NEW MAPS.

AFRICA.

CAPE OF GOOD HOPE.—Geological Maps accompanying the Tenth Annual Report of the Geological Commission for 1905. Various scales. Department of Agriculture, Cape Town, 1906.

Five black-and-white maps showing the distribution of the geological formations in the George, Knysna, Humansdorp, and Uniondale divisions of the Coastal Plateau, Indwe Mining Area, and parts of Mafeking and Vryburg, Hay, Uitenhage, and Alexandria. A larger area than usual was mapped in 1905.

EGYPT.—Bartholomew's Tourist's Map of Egypt and the lower Nile. Scale, 1:1,000,000, or 15.8 statute miles to an inch. The Edinburgh Geographical Institute, Edinburgh, 1906 (2s. net).

The recent survey sheets issued by the Egyptian Government have been fully utilized in the preparation of this fine map. All villages and points of historic